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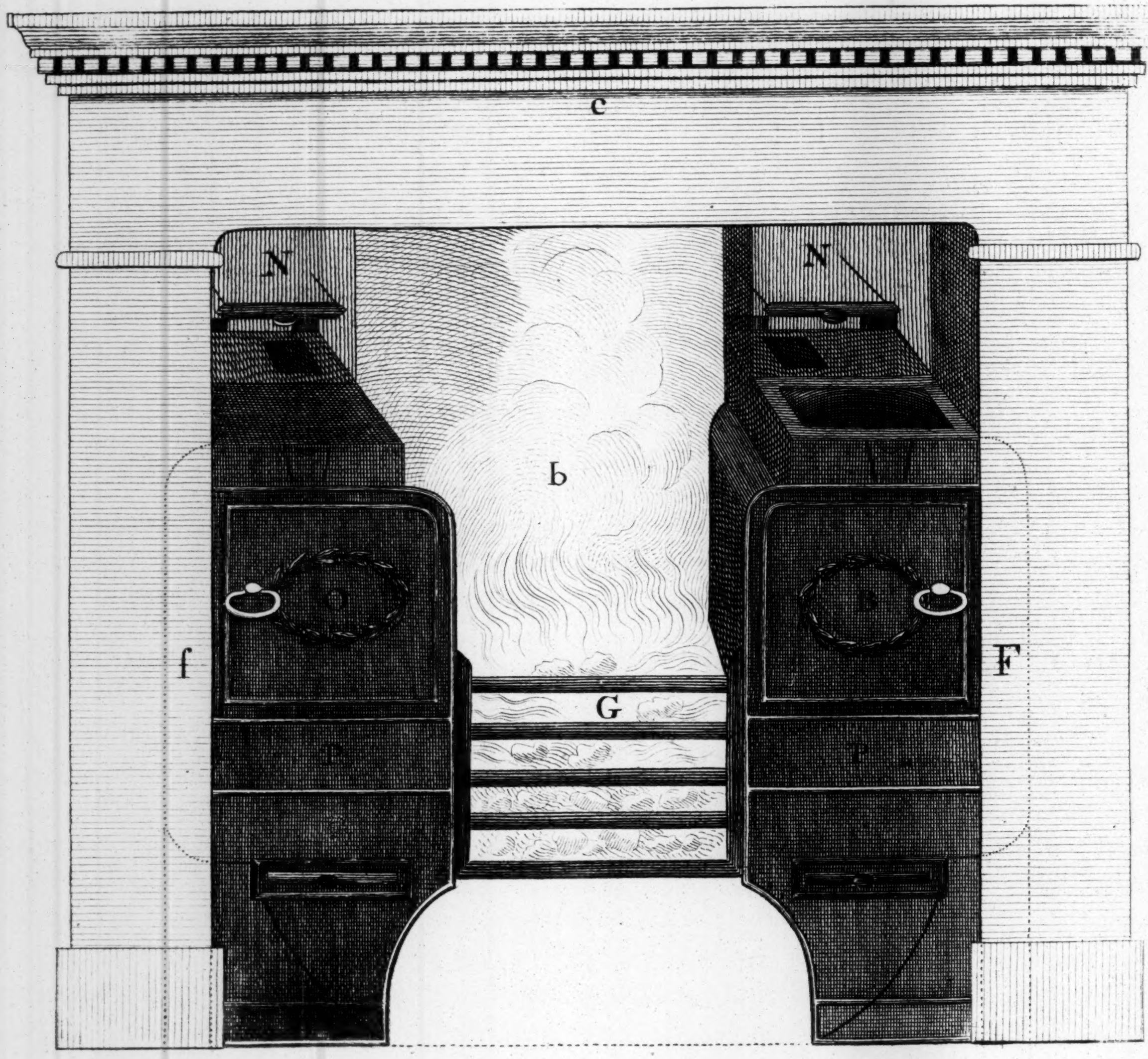

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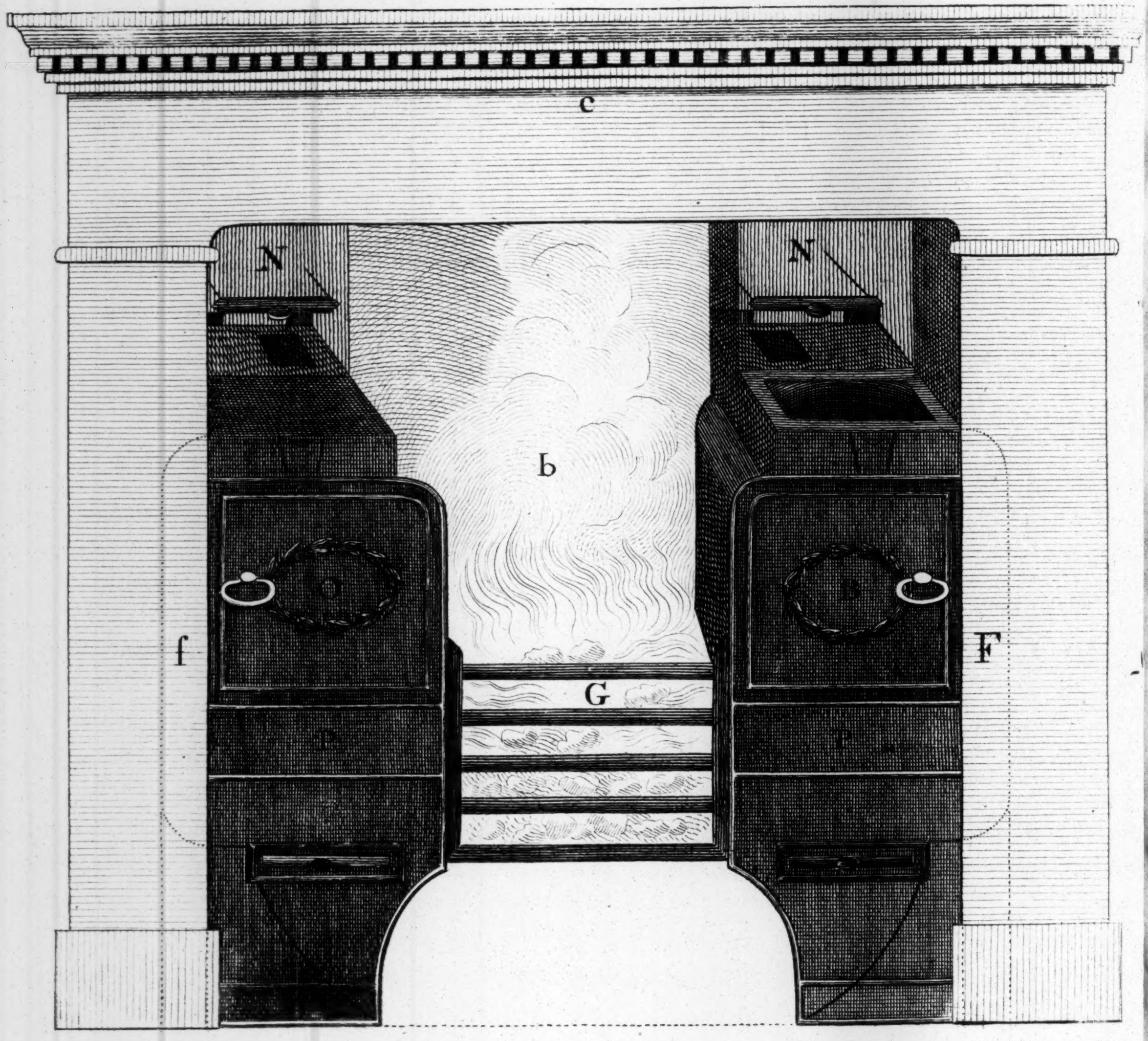

A
NEW INVENTION,
CONCERNING THE
Ground Plan, and Elevation,
OF
IRON OVENS, BOILERS, BREWERS PANS, ETC.

Published from Experience, with an Intention to shew to the Public, the infallible Method of setting them up, to heat for Baking, or Boiling, in twenty Minutes, by a moderate Fire: also Ovens to heat in so regular a Manner as not to be liable to burn at the Bottom, but to bake alike all over at the same Time.

By JOSEPH NORBURY,

Brick-layer, Stone-Cutter, Designer, &c. near Knutsford, Cheshire.

PRINTED AND SOLD BY EDWARD BAYLEY;

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PREFACE.

The Author having made it his particular Study for many Years to bring the Improvements mentioned in this Book to Perfection, can now with the strictest Truth assert, that his Plan answers in so certain a Manner, that out of the Number of two hundred and fifty Ovens and Boilers, set up by Himself or under his Direction, not one has been known to fail in any Particular.—This must be of the greatest Utility to House-keepers in general, as his Method of setting up Ovens has been found by Experience to save in some Places three-fourths of the Fuel commonly used for heating, but upon an Average one-half.—References for Proof of the above (if required) are respectfully addressed to those Gentlemen who have had both Ovens and Boilers set up according to the Plan described in the present Publication.—It was thought expedient to begin first with a common Oven, separate from the Grate and Boiler, and next to proceed to *the Boiler and Oven complete, as they are cast at the Foundries; after which the Boiler, or Brew-Pan, by itself: so that by these three Chapters with the References annexed to each Plate, it is presumed any Person may have a clear Idea how to set up any Oven, &c. completely, to heat in twenty Minutes by a moderate Fire. There is nevertheless not a Doubt but that some will attempt to controvert the Improvements herein mentioned, but the Author is well assured that it will not prevail with Persons conversant in practical Knowledge, to whom he humbly submits a Trial of his Plan, and hopes that it will be found to merit the Approbation of a candid and discerning Public.*

Joseph Norbury.

RECOMMENDATIONS

IN FAVOR OF THIS WORK.

The Author begs Leave to inform the Reader, that he has set up Ovens, &c. for a great Number of Gentlemen and eminent Tradesmen in Town and Country, according to the Plan described in this Book; and that he has submitted his Manuscript to the Examination of several eminent Mechanics, and others, who have delivered in their Testimonies in Favor thereof, but for Want of Room can only insert the following.

JOSEPH NORBURY,

The Oven, Grates and Boilers which thou hast set up for me, have answered all the Purposes for which they were designed, in a much more complete and satisfactory Manner, than they had ever previously done.—I am so well satisfied with the general Principles upon which thy Improvements are grounded,—and so sensible of the extensive Saving, as well as great Convenience, that will accrue from the Adoption of thy Plan—that I very sincerely wish thee all the Success thou may have promised thyself—remaining, &c.

2nd 1st Month, 1800.
Holt Town.

DAVID HOLT.

JOSEPH NORBURY,

The Oven and Boiler set up by thee for me, answer in all Respects as well as I could possibly desire.

Morley, 1*st of* 1*st*
Month, 1800.

THOMAS CASH.

MR. NORBURY,

Sir,

If required I will recommend your Work to any Gentleman who would wish to employ you in your Line.—The Oven &c. you set up for me answers exceedingly well; Yours, &c.

GEORGE BUTTER.

Newal, Jan. 1, 1800.

JOSEPH NORBURY,

The Oven and Boiler thou hast set up for me, far exceeds my Expectation, as I believe there will be a Saving of one-half (if not two-thirds) of the Coals they usually consumed. I wish, whilst thou wast here, I had got thee to set up my large Furnace—I shall recommend thy Work to my Friends as a very great Improvement.

Drakelow, 24*th* 6*th*
Month, 1799.

ROBT. WHITLOW.

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N.B. Many more Gentlemen have given in their Names as Subscribers in Town and Country, whose Names would have appeared in this List, had they been forwarded in due Time to the Author from the different Booksellers.

A

NEW INVENTION, &c.

CHAPTER I.

Containing Directions for Setting up a common Oven.

Before you begin to set up any Oven, let the Hearth and Grid be well cleaned from all Sorts of Ashes and Rubbish, and with a Hand-brush sweep the Soot cleanly from the Back of the Chimney, and wash the Bricks well with the Brush and Water as high as you can reach, then plaister the same well with Hair-Mortar.—Next, measure the Diameter of the Oven backwards, and allow one Inch above the exact Measure for the Flue at the Back; do the same by the Front, and allow three Inches for the side Flue, which mark on the Hearth before you begin to work, and you will have the exact Dimensions of the Flues and Oven before you at a View.—It sometimes happens there is no cast-metal Plate belonging to the Oven, in which Case you may get a Flag, twenty-one Inches high, well dressed in Front, and a Space to admit the Ash-damper cut therein ten and a half or eleven Inches from the Ground, which will answer nearly as well as a Plate.—But if neither Plate nor Flag can be procured, set Bricks instead thereof, eleven Inches high, and lay the Centre of the Ash-damper to answer exactly to the Centre of the Oven-Bottom, then carry the Bricks ten Inches higher. In this Case there will be a small Vacancy between the Side of the Ash-damper and the Grate, which must be filled up with a flat Piece of Iron about a Foot long and one Inch thick, and Breadth according to the Vacancy.—If you set up your Oven with a Plate or Flag, take Care to line it well in the Inside with hard Bricks set upon the Edge, and take the Inside Corners off the Bricks which line the Plate or Flag, on account of the Instruments used to stir the Fire sometimes catching those Corners, and so loosening the Bricks, which causes them to fall down in a short Time. Let the Bricks you line with be well dipped in Water before you use them, which with the Assistance of good Mortar applied both to the Brick and Flag, or Plate, will cause them to cement together firmly, so as to stand a considerable Time longer than by only mortaring the Bricks, or Plate separately.—Where there has been an Oven set up before, the Bricks will in all Probability be sooty, consequently the Mortar cannot stick at all without using the above Method. But if the Bricks be new or damp, you will have little Need to water them, only observe to mortar them and the Plate as before mentioned. In the third Plate (Fig. 3.) is represented two Irons, used commonly as Supporters to the Oven, should the Bricks give Way or fail; these Irons are to reach in Length from the Topside of the Ash-damper to the Underside of the Saddle at the farther End of the Oven, and should be made firm by lining them with Pillars of Brick, five Inches square, and separate from each other eight Inches, betwixt which the Smoke is to pass into the one Inch Flue behind, and so rise perpendicularly up the Pipe which conveys the Same into the Chimney. The Saddle of the Oven is to lie solidly flat upon the Front Plate and the two Pillars before mentioned, and the further End of the Saddle must be half an Inch higher than the Front thereof, as Ovens are mostly cast deeper to to the Front than the Back by one Inch; therefore if the Saddle were set upon the Level, the Front of the Oven would not stand perpendicular with the Front Plate, which would look very aukward, particularly where there is a Stone Chimney Piece.—Before you set up the Oven, get an Iron four-square, the same Length and Breadth as the Oven Bottom and exactly one Inch deep, (see Plate 1st, Fig. I.) which must lie between the Oven and the Saddle, without Mortar therein, only pointed a Little to the Front, to keep in the Smoke.—This is the only Defence against the Oven Burning any Thing put therein, at the Bottom, and, with the Assistance of the Flue behind, causes it to heat alike all over at the same Time. When you have laid this Iron upon the Saddle, (and before you set the Oven thereon) take Care to have the Corner at the further End backward of the three Inch Flue closely stopped up with Mortar to keep the Smokes in the Flues asunder, until they come above the Top of the Oven, and also the Corner at the End of the one Inch Flue, to keep the Smoke from coming into the Fire Place.—After this is done, set on the Oven perpendicular with the Front Plate, then observe that the Flue behind continue to be not above one Inch Inside Measure from the back Walls; if it be, apply Hair-mortar to the Wall till you attain the exact Measure.—The neglect of this one Particular will cause the Oven to fail in Heating, for the Smoke rising perpendicularly at the further End of the Oven, must not go round the Top, (as is generally imagined) but straight up into the Pipe, and so on up the Chimney, this is therefore the exact Measure, whether the Oven stand to the right or left Hand of the Fire-place. Next lay the Oven Top thereon, and apply a little Mortar outwardly, which will cause the Top to lie solid, and will keep in the Smoke, &c. There being two Holes in an Oven-Top observe to keep only that open which is next the Fire to admit the Smoke which comes up the three Inch Flue at the Side of the Oven, which will meet the Smoke that arises from the one Inch Flue behind, and ascend with it upwards till they are stopped by the Smoke-damper above; the true Height of the Smoke-damper is nine Inches, (see Plates 1st and 2nd,) the Flues cannot be covered with the Damper, being laid upon the Oven-top, because all Dampers are (at present) cast two or three Inches too short, with an Intention only to stop the Smoke which arises from the three Inch Flue, but the small

Flue behind was never before made Use of by any One.—After you have placed the Smoke-damper, proceed to build the Pipe, (perpendicular if possible) up the Chimney, as high as you can reach, and if the Chimney will admit, get a Step-ladder or Bench to stand upon, and continue the Pipe therefrom as high as you can, but before you come to the Height you intend with the Pipe, leave a Hole, six Inches square in the Side, then build the Pipe up, and cover the Top with a Flag and Mortar firmly, (so as not to be pulled down when the Chimney is cleaned,) this will prevent the Soot from falling into the Pipe, which would soon wreck it up. When the Oven and Grate are separate, always finish the Oven and Pipe, before you set up the Grate, and be cautious that no Pieces of Brick or Mortar lodge in the Flues.

REFERENCES TO PLATE THE FIRST.

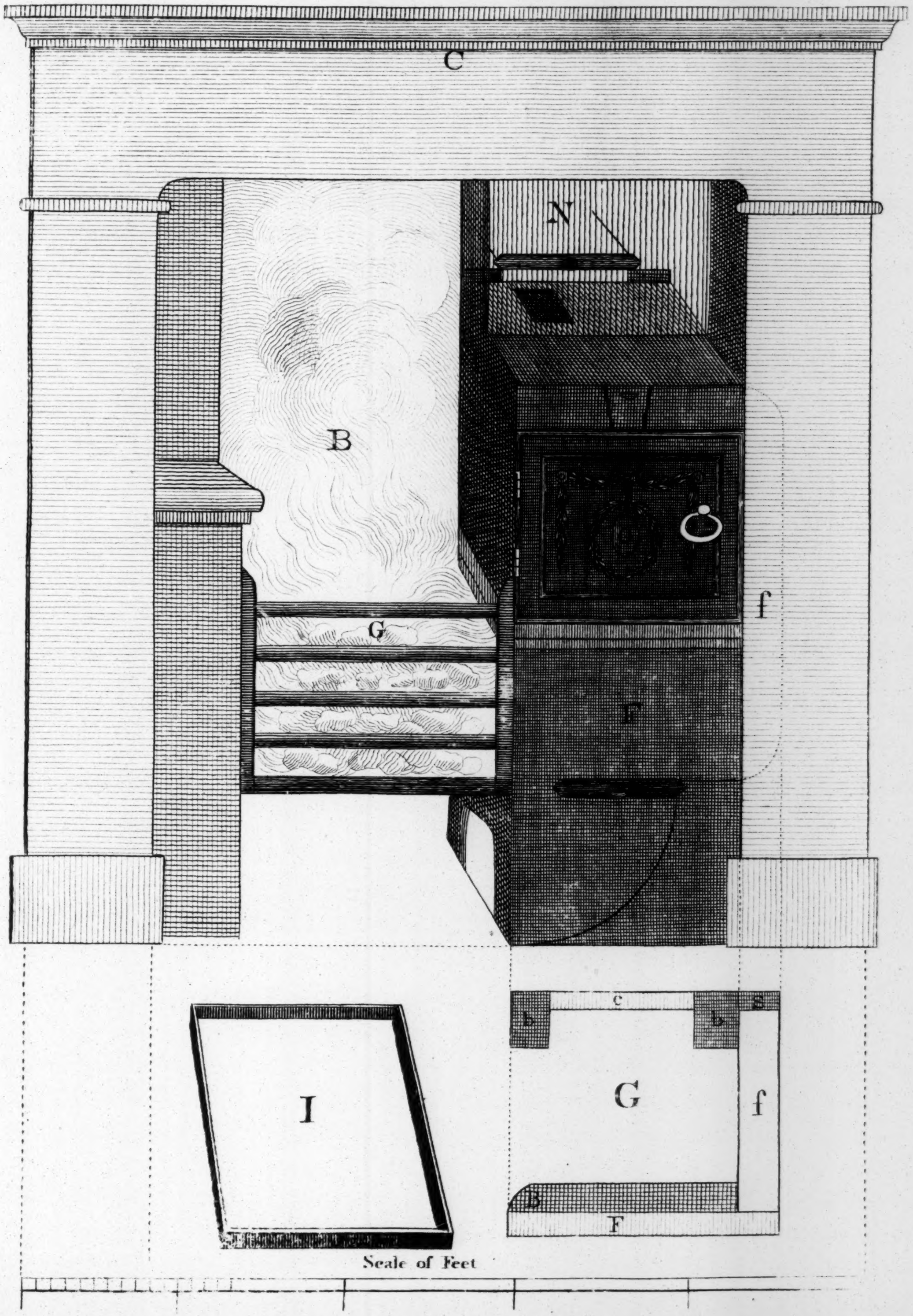
References to the Elevation of the Oven.

C	The Chimney Piece.
B	Back of the Grate.
G	The Grate.
F	A Flag twenty-one Inches high. (See the Scale.)
f	The right Hand Flue, three Inches wide, see the dotted Line from the Ground Plan.
N	A Flag above the Oven, containing the Smoke-damper.
)	This crooked Line shews that the Bricks must be set up in the same Form, in the Inside of the Flag under the Oven, and when you draw the Ash-damper the Ashes will run to the Grid gradually down, without using your Raker.
I	A four-square Iron, the same Size as the Bottom of the Oven, and one Inch deep, which is to be between the Saddle and the Oven to raise the Oven one Inch, and no Mortar is to be put between the Saddle and the Oven, except in the Front to keep in the Smoke.

References to the Ground Plan of the Oven.

G	The Ground Plan.
F	A Flag instead of a Cast-metal Plate.
B	The Flag lined with Bricks on the Edge in the Inside.
b	The Pillars which the Oven stands upon.
f	A Flue three Inches wide, Inside Measure.
c	A small Flue, at the further End of the Oven, which should be exactly one Inch wide, Inside Measure.
S	Shews that when the Oven is set upon the Saddle, that Corner must be close stopped, to keep the Smokes asunder, until they come above the Top of the Oven, and then the Smoke-damper is to cover them both.

PLATE 1



CHAPTER II.

Containing Directions for Setting up an Oven and Boiler complete.

IF there be a Stone Chimney Piece, proceed as follows: lay a Rule upon the Hearth to the Front of the Jambs, and thereby draw a straight Line with Chalk, and allow inward two Inches and a half, or the Thickness of the Slab at each Side. Afterwards measure for the Oven, and allow one Inch more than the Dimension of the Oven backwards for the small Flue, and three Inches on the left Hand behind the Slab of the Chimney Piece for the large Flue, if there be not Room cut the Flues out of the Back and Jamb to the exact Dimension, Inside Measure. Then measure for the Boiler on the right Hand, and allow an Inch and a half backwards for the small Flue, and three Inches to the right Hand for the large Flue, this must be the exact Dimension, whether the Boiler stand to the right or left Hand of the Grate.—Next set the Plates and Grate upright in the Fire-place, and if they should not fill up the Vacancy, get two small Flags and fix them at each End so as to join the Jambs and Plates. These being neatly dressed and blacked, have the Appearance of Cast-metal. The Plates must be lined with hard Bricks, set upon the Edge, as mentioned in Chap. I. The Holes from the Ash-dampers must be according to the Size of the Dampers, and well supported at each Side by Bricks. The Plates of the Oven and Boiler have each a Nib or Hole in the Inside thereof, these are for Holdfasts to hook in, and to be fastened at the farther End to one of the five Inch Pillars of the Oven or Boiler, which will preserve the Plates from moving out of their proper Stations.—The Front Plate of a Boiler being all in one, and in that Respect differing from the Oven, it must be particularly observed that the four-square Iron, mentioned in Chap. I., must not be used, as it would destroy the Uniformity in the Front, but in lieu of this Iron, when you lay the Saddle upon the Plate of the Oven, drop it at the further End an Inch and a half upon the two five Inch Pillars, and raise the Oven from the Saddle with two small Pieces of Flag so as to make it stand perpendicular in the Front.* This has been proved to answer in Respect to keeping the Oven Bottom from Burning, the Same as raising the Front one Inch; after this is done, proceed with the Oven in all Respects the Same as mentioned in Chap. I.

The three Inch Flue on the right Hand of the Boiler represented by F in the Ground Plan, Plate II., shews that the Heat is to go round the right Hand Pillar at the further End of the Boiler, and not to be stopped as in the Corner of the Oven, but both Smokes are to go together up the one Inch and a half Flue at the further End of the Boiler, the right Hand Flue is to be covered with a row of Bricks, as near the Top of the Boiler as you can, and the Smoke-damper is to cover the Smoke above; lastly, finish off above the Boiler in all Respects the Same as the Oven.

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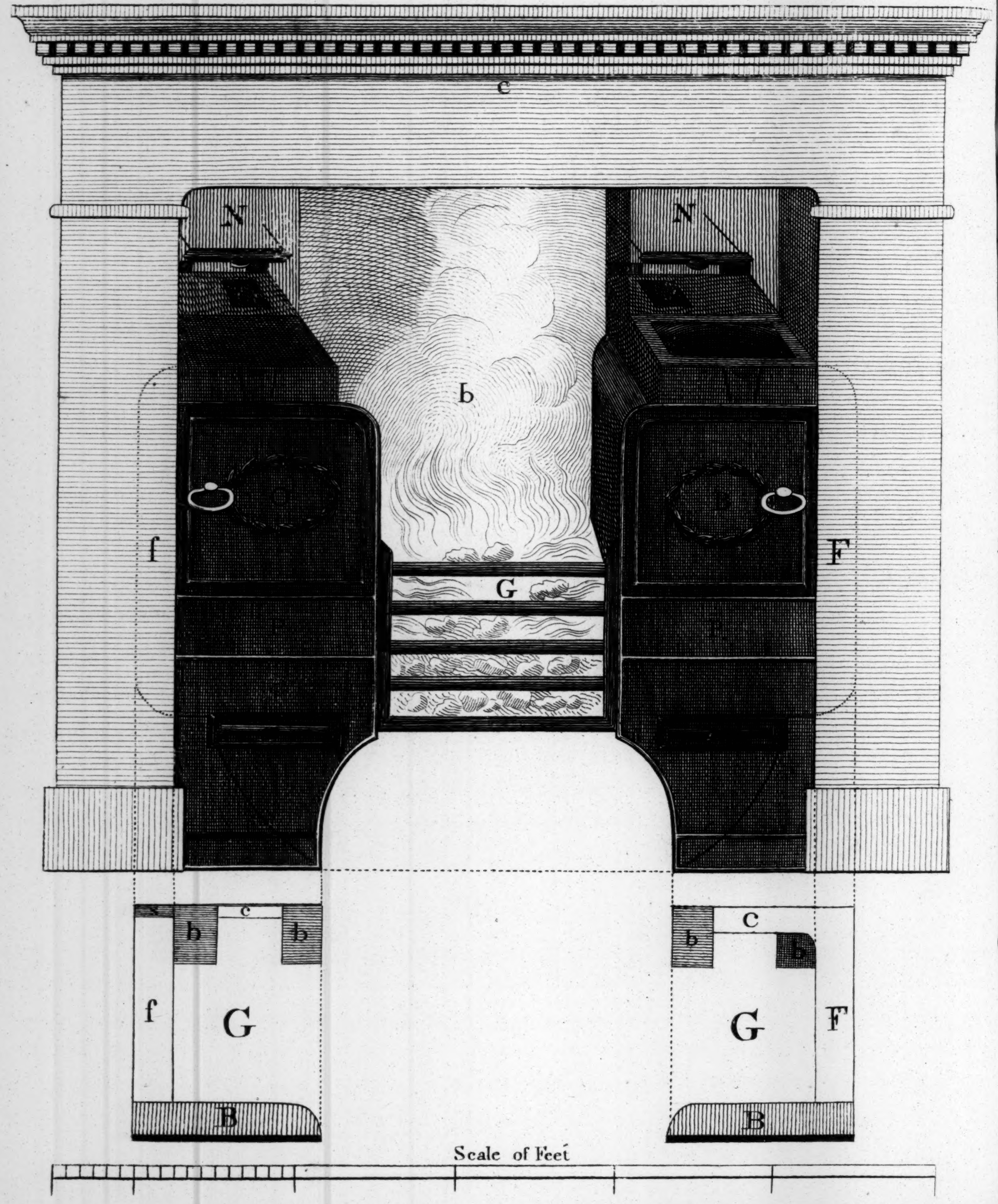
* If the Front Plates of Ovens be cast (for the purpose) with the Ribs (which the Saddle stands upon) in the Inside one Inch and a half instead of half an Inch from the Top, it will save the Expence of the four-square Iron, and will answer the same Purpose as using the Iron or dropping the Saddle at the Back.

Note. When the Oven and Boiler are cast together they ought to stand each upon their respective Front Plates, twenty-one Inches high, instead of seventeen, the usual Height. See Elevation, Plate II.

PLATE 2



REFERENCES TO PLATE THE SECOND.

This Plate shews the Iron Oven, and Boiler, with the Height the Plates under them ought to be cast at the Iron Foundries, they having always been cast four Inches too low. (See the References below.)

References to the Elevation of the Oven.

C The Chimney Piece.
b Back of the Fire-place.
G The Grate.
O The Oven.
P The Cast-metal Plate, a proper Height, (viz. 21 Inches, see the Scale.)
f The left Hand Flue, three Inches wide Inside Measure.—See the dotted Line from the Ground Plan.
N The Flag containing the Smoke-damper, above the Oven.

Note. The white Lines across the Plates under the Oven and Boiler, denote their having been cast but 17 Inches high at the Foundries, instead of 21 Inches, which is a proper Height.

References to the Ground Plan of the Oven.

G The Ground Plan, under the Oven.
B Bricks set upon the Edge in the Inside of the Cast-metal Plate.
b Two small Pillars, which the Oven stands upon.
f One of the Flues on the left Hand, 3 Inches wide, Inside Measure.
c A Flue at the further End of the Oven, one Inch wide, ditto.
S Shews, that when the Oven is set upon the Saddle, the Corner must be close stopped to keep the Smokes asunder, until they come above the Top of the Oven, and then the Smoke-damper is to cover them both.

References to the Elevation of the Boiler.

B The Front of the Boiler.
P The Plate below cast a proper Height, viz. 21 Inches.
F The right Hand Flue 3 Inches wide, Inside Measure.—See the dotted Line from the Ground Plan below.
N A Flag above the Boiler, which contains the Smoke-damper.
\ ) These two curve Lines, below the Ash-dampers, shew the Form in which the Bricks are to be set up within the Plates, that when you draw the Ash-dampers, the Ashes will run gradually down from them to the Grid, without using your Raker to them.

Note. When the Oven and Boiler are complete, instead of the four-square Iron (mentioned in Plate I.) being made Use of, you must drop the Saddle at the Back an Inch and an half, upon the 5 Inch square Pillars, which will answer the Same as raising the Oven one Inch.

References to the Ground Plan of the Boiler.

G The Ground Plan of the Boiler.
B Bricks set upon the Edge in the Inside of the Cast-metal Plate.
b Two small Pillars which the Boiler stands upon.
F The right Hand Flue three Inches wide, Inside Measure.
C A Flue at the further End of the Boiler, which should be one Inch and an half wide exactly, Inside Measure.

Note. If your Boiler happen to be of the old Construction, i. e., round instead of square, for an exact Method of setting it up, to answer in a few Minutes, look in Plate III.

CHAPTER III.

Containing Directions for Setting up a round Boiler or Brew Pan, &c.

IT is but within these few Years that the Foundries have begun to run the Boilers belonging to Ovens, square instead of round, which Experience hath justly shewn to be a very great Improvement; it is supposed nevertheless, that there are a great Number of round Boilers useless in this Kingdom, owing to their not being set up in a right Manner, therefore the following Directions may be of great Utility if strictly followed, by causing a small round Pot or Boiler to heat so as to boil in fifteen Minutes, and in some Places, where the Chimney is a good one, in ten Minutes. The Front Edge marked F, (Plate III., Fig. 4th.) shews the Front Plate containing the round Pot or Boiler belonging to an Oven.—The Heat from the Fire is to go under the Boiler from G, and C shews where the Heat arrives in the two Inches and a half Flue marked f from the Underside of the Boiler, and opposite to the Front Plate the Pipe must stand, which conveys the Smoke up the Chimney, as represented at P; the outward Edge of the Bottom of the Boiler must be set two Inches and a half upon a Row of Bricks all round except where the Heat comes into the Flue.

Directions for Setting up a large Pot or Brew Pan, as represented in Plate III., Fig. 1st.

Before you begin to work, clear all the Rubbish from about the Place, and, if the Pan be not too large, turn it upside down, and draw a Line with Chalk, &c. round the Top, allowing three Inches for the Flue, and four Inches and a half for the Brick-work, which will cause the Brick-work to stand perpendicular to the Top. When Pans are very large, instead of turning them upside down, you may measure the Diameter thereof, making the aforementioned Allowances for the Flue and Brick-work; next, make the Place where the Ashes fall into, a proper Height and Breadth, according to the Frame of the Iron Door, this Frame must be set three Inches inward from the Front of the Brick-work, and lain a little inward at the Head.—In Plate III., Fig. 1st., in the Ground Plan, C shews where the Heat comes up from under the Boiler into the Flue, and P, opposite to C, shews where the Pipe must stand which conveys the Smoke into the Chimney; before you set on the Pan, measure the Height of the Door-Frame and let the Pan Bottom stand exactly the same Height. The Bricks at the Top of the Door are to stand square at the Bottom next to the Fire, which will hinder any Puffs of Smoke from coming out, and greatly reduce the Consumption of Fuel; put loose Bricks under the Centre of the Pan to support it, until you have laid a Row round the outside Rim of the under Edge. The loose Bricks may be removed when the Boiler is completed.—Next proceed with the Brick-work until you come within four Inches of the Top, then cover the Flue,* with a heading Course of Brick, and let no Mortar or Rubbish drop into it. Small Pots or Pans should be covered as near the Top Edge as possible, because the Flue is not so deep as one of a larger Dimension.

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*Observe to plaister the Flue well as you proceed in the Brick-work.

PLATE 3

Fig 1

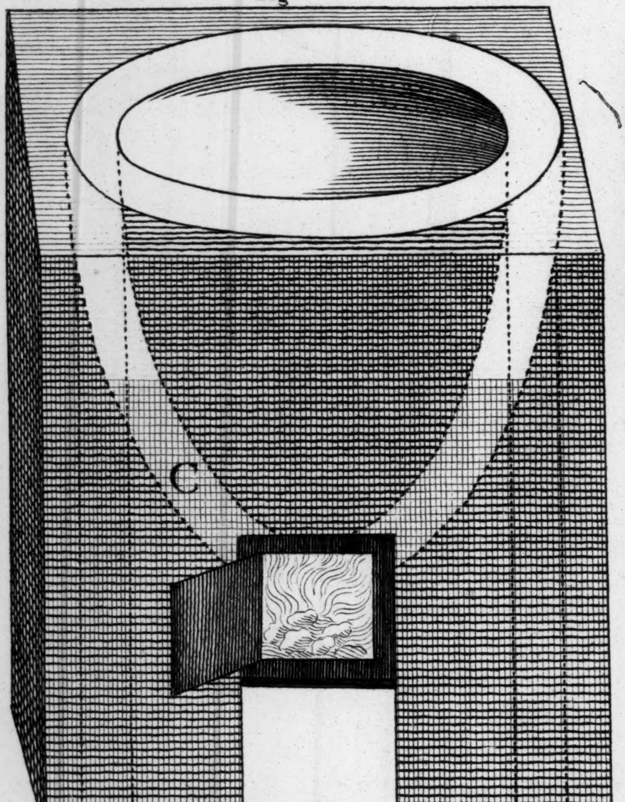


Fig 2

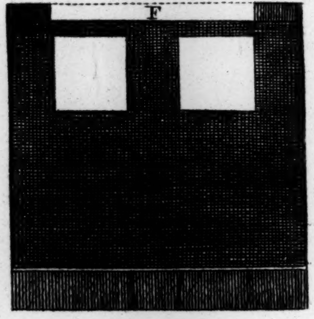


Fig 3

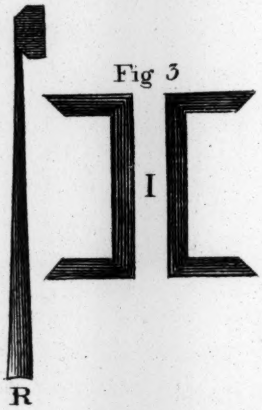
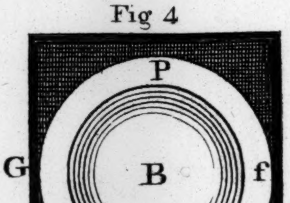
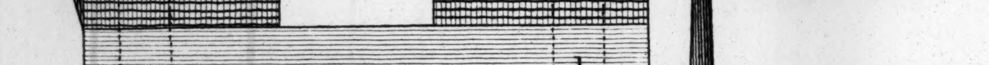


Fig 4





REFERENCES TO PLATE THE THIRD.

References to the Oven Top.

T The Top of a common Iron Oven, shewing the Corners at the Back closely stopped, and the Hole which admits the Smoke through it, whether the Oven be set up to the right or left Hand of the Grate.

F A Flue of one Inch wide, which the Smoke-damper is to cover close.

References to the small round Boiler, mentioned in a Note, Plate II.

F The Front-plate, containing the round Boiler.

G The Fire-place, below the Bottom of the Boiler.

B The outside Edge of the Bottom of the Boiler, set upon Bricks.

f A Flue two Inches and a half wide, which carries the Heat round the Boiler.

C The Place at which the Heat arrives from the Fire below into the Flue, from which Place the Boiler is to receive its Heat, and no where else round the Flue.

P The Place upon which a Pipe is to stand exactly perpendicular, to convey the Smoke into the Chimney.

I Two Irons (one Inch square) which are to be set upright and lined with Bricks, at the further End of the Oven, meant as Supporters to the Oven, when the Bricks are burnt away.

R The Raker, a small Instrument which should be flat a Foot in Length at the Handle-end, used to clean the Slides, &c., in the Ash-dampers.

References to the large Boiler, or Pan.

C The Elevation.

b The Brick-work round the Ground Plan of the Boiler.

F The Fire Place under the Boiler.

f The Flue (three Inches wide, Inside Measure) which goes round the Boiler.

B The outside Edge of the Bottom of the Boiler, set upon Bricks.

C The Place where the Heat is to come up from the Fire-place below, from whence the Boiler is to receive its Heat, and no where else round the Flue.

P A Place (exactly opposite to C,) upon which a Pipe must stand to convey the Smoke up the Chimney.

Experimental Observations.

1st. To preserve the Bottom of a Copper or Brass Pan from sustaining Damage by the Fire, or from burning any Thing put therein; get a Piece of Iron similar to the Saddle of an Oven, only cast hollow the same as the Pan's Bottom, and to come up eight Inches at the Place where the Fire ascends into the Flue; Care must be taken to place the Underside of this Saddle the same Height as the Top of the Door-frame, and the Pan must be raised half an Inch from the Saddle by the Assistance of small Pieces of Flag or Slate, and no Mortar to be put between the Bottom of the Pan and the Saddle.—These Saddles may be cast at the Iron Foundries, after the Founders know the Size of each Pan's Bottom.—This must be of the greatest Use to Brewers, Dyers, or other Persons who are under the Necessity of having large Pans and a continual Fire under them, by these Means a Pan of Brass or Copper may be made to endure a number of Years longer, besides the Advantage of never burning any Thing at the Bottom.

2. When an Oven is heated ready for Baking, draw out the Ash-damper, and let down the Fire which lies upon it, and put no more upon it, this will greatly assist in preventing the Oven from burning at the Bottom, having been practised on the Author's Recommendation by several House-keepers with Success.

3. It has been a prevailing Idea with the Generality of House-keepers, that any Thing baked or roasted in an Iron Oven will not be so pleasant to the Taste as in a Brick Oven, the Author wishes to eradicate so erroneous an Opinion, as he can affirm, jointly with many others, that it is only owing to the Inside of the Oven not being kept perfectly clean. It may be supposed by some that putting a wet Cloth in an Oven may endanger its cracking, but that this is totally unfounded many are very well convinced of by Experience.

4. Some Oven-tops of the old Construction are cast one Inch or more too low, when that is the Case you must raise the Top by a four-square Iron one Inch or more in Thickness, similar in shape to that marked I, Plate I.

5. It is objected by some Mechanics that a Fire where there is an Oven at the Side, will not roast any Thing so well before it upon a Spit, this is also totally unfounded, the only real Objection is owing to the Oven not being set up in a proper Manner.

6. Stoves in Factories, &c., or Pans, ought to have a Damper, (and particularly where there is a rapid Draught) affixed in a proper Place according to the Number of Rooms the Stove is to heat, and the Damper may be drawn more or less according to the Draught. This is a great Means of saving Fuel as fifth of the Quantity commonly used will answer the purpose and reflect more Heat into the Rooms.

7. Ovens after the old Construction set up by themselves at the

Back of the Grate, or elsewhere, let the Flue, at the farther End, which conveys the Smoke over the Top, be three Inches wide, and both Corners stopped up at the farther End, and the out side Edge of the Oven to be set upon Bricks, (except two small Flues, two Inches square,) one opposite to the other, about the Middle of the Oven, and the Pipe, which conveys the Smoke above the Oven Top into the Chimney, to be brought as near to the Front of the Wall as possible.

Address to the Public.

The Author will, if required, wait upon any Lady or Gentleman, in Town or Country, to do any Work in his Line, as Architecture, Masonary, Designing, &c., or respecting any Particulars mentioned in this Work, which he performs himself, and upon Condition, that without Ovens, &c., answer as represented, he will require nothing for his Trouble.—Steam Engine Pans, &c., particularly attended to.

Letters (post paid) directed "Joseph Norbury, Newton Hall, Mobberley, near Knutsford, Cheshire," will be duly attended to.

FINIS.

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